POTATOES: DISTRIBUTION AND PROCESSING

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THE AGRICULTURAL ECONOMICS RESEARCH UNIT
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Major sources of funding have been annual grants from the Department of Scientific and Industrial Research and the College. However, a substantial proportion of the Unit's budget is derived from specific project research under contract to government departments, producer boards, farmer organisations and to commercial and industrial groups.

The Unit is involved in a wide spectrum of agricultural economics and management research, with some concentration on production economics, natural resource economics, marketing, processing and transportation. The results of research projects are published as Research Reports or Discussion Papers. (For further information regarding the Unit's publications see the inside back cover). The Unit also sponsors periodic conferences and seminars on topics of regional and national interest, often in conjunction with other organisations.

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PREFACE

The Agricultural Economics Research Unit has had a continuing involvement with the New Zealand potato industry since 1979. This resulted in the publication of Research Reports in 1980 (M. M. Rich and M. J. Mellon, "Potatoes: A Consumer Survey of Christchurch and Auckland Households", Research Report No. 105) and 1982 (R. L. Sheppard, "The New Zealand Potato Marketing System", Research Report No. 130). The consumer survey was undertaken for the New Zealand Potato Board and the marketing system research was carried out for the New Zealand Potato Growers' Federation.

As a result of the research on the marketing system, the need for a review of potato distribution costs and the processing sector requirements was identified. This was accepted by the New Zealand Potato Board and New Zealand Potato Growers' Federation and this Research Report presents the results of that research.

The marketing system research identified a significant degree of variation between regions in the types of marketing channels used. The previous consumer research also identified differences in consumer response between Auckland and Christchurch. It was therefore recommended to the Potato Board that a further consumer survey be undertaken to confirm regional differences and to identify changes that might have occurred since 1979. Research Report No. 145 (R. L. Sheppard and S. A. Hughes, "Potatoes: A Consumer Survey of Auckland, Wellington and Christchurch Households") presents the survey results.

This programme of research has been undertaken for the New Zealand Potato Board and the New Zealand Potato Growers' Federation and is intended to contribute to the understanding of the sector and to enable the organisations to make appropriate decisions based on well researched information.

P D Chudleigh
Director

ACKNOWLEDGEMENTS

Gratitude is expressed to the potato auctioneers/salesmen at the central markets in Auckland, Hamilton, Wellington, Christchurch and Dunedin, as well as the managers of the prepacking companies, for making the time available to be interviewed, and for their kind co-operation.

Gratitude must also be expressed to the numerous retailers who were interrupted in the course of their jobs to answer questions on their selling of potatoes and to all the food processors who took the time to fill in and return the questionnaire.

The New Zealand Potato Board and the New Zealand Potato Growers' Federation are acknowledged for ther foresight in recognising the need for this research and their financial support of the project.

SUMMARY — POTATO DISTRIBUTION

Part 1 of this report presents the findings of a study of the distribution costs and margins involved in the potato industry. Only the main crop potato distribution channels from grower to retailer are examined. Distribution costs include such things as transport, packaging, waste and overheads. Distribution margins allow for the differences between buying and selling prices at each level, and include distribution costs and profits.

The objectives of the study were to indicate which channels are more cost efficient, and to suggest strategies to improve the distribution channels in order to attain better returns to growers.

The research method involved surveying various outlets involved in the distribution system. These included central markets, prepackers, wholesalers, supermarkets, superettes, fruiterers, dairies and super fruiterers. The outlets were located in Auckland, Hamilton, Wellington, Christchurch and Dunedin, and were visited during the period 21 March to 22 April.

The results of the survey indicate only two main channels of distribution. These are the grower-prepacker-supermarket channel and the grower-central-market- grocer channel. Grocers are all other retailers (apart from supermarkets) and include superettes, fruiterers, dairies and superfruiterers.

Despite small regional differences, the results are consistent for all five urban centres. Potato growers received similar prices from both central markets and prepackers. The average selling prices at the retail level are higher for grocers than supermarkets as are average selling margins. The higher margins reflect the grocers' lower buying price (from central markets rather than prepackers) and their higher direct costs than prepackers/supermarkets.

The distribution costs were calculated for each channel from central market to grocer and prepacker to supermarket. (Growers distribution costs are assumed to be approximately equal for both channels.) The average cost of distributing one kilogram of potatoes through the central market-grocer channel is 8 cents. The average cost of distributing one kilogram of potatoes through the prepacker-supermarket channel is 5 cents.

The higher distribution costs associated with the central market-grocer channel can be attributed to the diseconomies of scale associated with grocers prepacking the potatoes into smaller bags (compared with a prepacking operation), the use of 20 kilogram bags for grower to grocer transport and the higher level of waste on potatoes sold through the central markets.

One conclusion that can be drawn from these results is that most consumers will eventually move to purchasing potatoes from supermarkets. This is because of the lower potato prices in supermarkets (with similar quality and range of bag sizes), and the overall trend for all grocery purchasing. The grocers shop will continue selling potatoes but at a lower proportion of total sales and to a smaller market segment which requires loose potatoes or smaller bags of potatoes.

Since supermarkets are supplied almost exclusively by prepackers, and the trend is towards the prepacker–supermarket channel, growers will be dealing increasingly with prepackers as opposed to central markets. This implies that the method of determining prices for growers should change. It would be inappropriate for the central markets to have the main influence on potato prices if the bulk of potatoes were going to prepackers. Price negotiations between growers and prepackers should therefore eventuate.

In order to increase the returns to growers, a number of alternative strategies are put forward. If the price set by the prepacker is considered to be too low to justify producing the potatoes, the grower can choose to stop producing. Alternatively, if the grower wishes to increase his market power he can combine with other growers and threaten to withhold the potatoes until an agreed price is set. A third strategy would be for these groups of growers to establish their own prepacking facilities and secure the profits available at the prepacker level of distribution.

SUMMARY — POTATO PROCESSING

Part 2 of this report presents the findings of a survey of New Zealand potato processors. The objectives of the study were to obtain information on the processing sectors' requirements and to forecast trends so that growers are better able to meet these requirements and are aware of the processing sector's potential.

The data were collected by mailing out a questionnaire to all food processors in the yellow pages of the New Zealand telephone directories. This sample of potato processors was validated by a knowledge of the identity of significant members of the processing sector and an estimate of the volume of potatoes purchased annually from growers by processors (Sheppard, 1982).

The results of the survey indicate that the processing sector is an important part of the total potato industry. Approximately 22 per cent of the total annual production is estimated to go to processors. The results also indicate that processors are not receiving good quality in terms of the specifications they require for their 'raw material' potatoes. Since these specifications are similar for all of the main processed potato products, growers should have no difficulty adapting from one processor to another. In order for growers to produce potatoes specifically for the processing sector, adequate prices must be paid by the processors for the appropriate qualities required.

The processing sector is expected to expand in future years in line with reported sales trends and overseas processing sector characteristics. However, a recent consumer survey carried out by the AERU (Sheppard and Hughes, 1983) indicated a static situation with respect to processed potato product purchases. If the New Zealand processing sector is to become a more significant part of the industry, a number of product modifications may be appropriate. As well as an improvement in the quality of potatoes used and the quality of the products produced, a wider range of products could be introduced. Potato extrusions, flour, starch and canned potatoes were suggested as products with market potential.

PART 1

POTATO DISTRIBUTION

CHAPTER 1

INTRODUCTION

This report presents the findings of a study of the distribution costs and margins involved in the potato industry. This study arose from previous research commissioned by the New Zealand Potato Growers' Federation in 1981. The research was intended to investigate the structure of the New Zealand potato market with a view to identifying the relative importance of the marketing channels, and provide a review of the performance of the 'auction' system. One of the conclusions presented in the report on the research (Sheppard, 1982) was that there was a lack of information on distribution costs and margins in the potato marketing system and further research was required if recommendations on more cost efficient systems were to be made.

The systems of potato distribution used by growers have been described in detail previously (Sheppard, 1982). This present study deals only with the distribution of fresh main crop, commercially grown, potatoes to domestic households. That is, it does not include processed potatoes, or potatoes that have gone through the catering or institution channels. Neither does it include seed, homegrown, stock food or export potatoes.

Distribution costs are incurred throughout the distribution system. They include such items as transport, storage, packaging, grading, bags, waste and overheads. Distribution margins are defined as the difference between the buying and selling price at each level of distribution, divided by the selling price. The margins therefore cover the costs incurred by each section of the distribution system plus profit.

The objectives of this study were to:

1. measure the costs and margins of distributing potatoes through different channels and so indicate which channels are more cost efficient, and;

2. suggest strategies to improve the distribution channels and so result in better returns to growers.

Since the study highlights differences between urban centres, such strategies are directed both regionally and nationally according to where problems are perceived.

Chapter 2 of this report describes the research method used. Results are presented in Chapter 3 and these are discussed in Chapter 4.

CHAPTER 2

RESEARCH METHOD

The research method used was chosen in order to meet the objectives of the research, which are to provide sufficient information for an examination of potato movement patterns, distribution costs and marketing margins.

This information was considered to be best collected by a survey of the various outlets involved in the distribution system (see Appendix 1). The survey was carried out using personal interviews in the five urban centres surveyed in the previous research; Auckland, Hamilton, Wellington, Christchurch and Dunedin; over the period 21 March to 22 April 1983. This time period was chosen to ensure only main crop potato prices were collected.

The personal interviews were relatively unstructured in that no set questionnaire was used. The interviews were flexible according to each type of respondent, and the respondents were told the nature and purpose of the survey. An outline of the questions asked of retailers, prepackers and central markets is presented in Appendix 2. The questionnaire involved mainly current retail prices and direct costs.

Personal interviews were chosen because of the sensitivity of some of the cost information as well as the diversity of the information desired. This method also suited the time available, the desired accuracy, the amount of data required and the resources available.

A survey of the central markets and prepacking companies in each area was undertaken. To obtain cost and margin information from the retailers of potatoes, a sample was taken. A nonprobability sample (i.e. not random) was chosen because the degree of diversity was expected to be small and the recording of prices and costs was not likely to produce significant error.

The sample was chosen from the yellow pages of the telephone books, under the headings 'Fruiterers and Greengrocers', 'Fruit and Vegetable Wholesalers', and 'Grocers and General Storekeepers'. These three headings included Fruiterers, Dairies, Superettes, Supermarkets, and Superfruiterers.

The sample size was determined according to the population size of the urban centre and the number of different types of outlets it had. In the bigger centres at least two of each of the major supermarket chains were selected and a geographic spread of other retailers ('grocers') across the city was taken.

In addition to the sample of retailers, a telephone survey of commercial carriers, commission agents, growers and wholesalers was carried out. The names of these people were obtained from either the potato salesmen at the markets or the prepacker managers. This telephone survey supplemented the cost and margin information gathered from the markets, prepackers and retailers.

The data collected were then analysed at Lincoln College and are presented in aggregated form in Chapter 4.

The limitations of the data must be pointed out. The use of a non-probability sample of retailers introduced a certain amount of selection error, especially for 'grocers' which varied from small dairies to super-fruiterers. Also, the sensitive nature of some of the cost information

sought may lead to measurement error where respondents did not give accurate information. However, the net effect of these errors is not considered large enough to decrease substantially the value of the data obtained.

CHAPTER 3

RESULTS

3.1 The Distribution Channels for 'Table' Potatoes

The survey of the distribution of potatoes involved visiting various outlets within the distribution system (Appendix 1). The outlets were central markets, prepackers, wholesalers, supermarkets, fruiterers, superettes, superfruiterers and dairies, and the visits occurred during the period 21 March to 22 April 1983.

The distribution channels used by retailers could be divided into two main ones, depending on whether the retailer was a supermarket or not. Supermarkets tended to use prepackers as their main source of supply while most other retailers obtained their potatoes through the central markets (Tables 1 and 2).

Wellington supermarkets differed from other supermarkets around the country in that 25 per cent bought potatoes only from the central markets (i.e. not prepacked). Another alternative source for supermarkets was direct from the grower (one supermarket in Hamilton and three supermarkets in Christchurch).

Since all other retailers sold markedly fewer prepacks than supermarkets (Table 1), they are grouped together for further analysis under the heading 'grocers'. Grocers are made up of superettes, fruiterers, dairies and superfruiterers.

TABLE 1

Retailers Selling Prepacked Potatoes[a]

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(%)		
Supermarkets	100	100	67	100	100
Grocers	22	25	21	29	10

[a] See Appendix 1 for numbers in sample.

Most grocers use the central markets as their main source of supply. Some use wholesalers or commission agents and some buy direct from growers or prepacking companies. The wholesalers and commission agents buy mainly from the central markets and prepackers. Table 2 shows the sources of supply given by grocers in each urban centre.

Figure 1 shows the two main channels of distribution for potatoes around New Zealand. The dotted lines show deviations from the main channels and these can be related to particular urban centres by referring to Table 2.

The volume of potatoes going through these main channels annually has been estimated for the markets and some prepackers (Sheppard, 1982). These volumes are presented in Table 3.

TABLE 2

Sources of Supply for Grocers

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(% buying from/through each source)				
Grower	—	17	—	7	10
Prepacker	4	8	21	—	—
Wholesaler	4	17	7	29	—
Commission Agent	43	—	—	—	—
Central Market	49	58	72	64	90
	100	100	100	100	100

FIGURE 1

The Distribution Pathways for Main Crop Table Potatoes

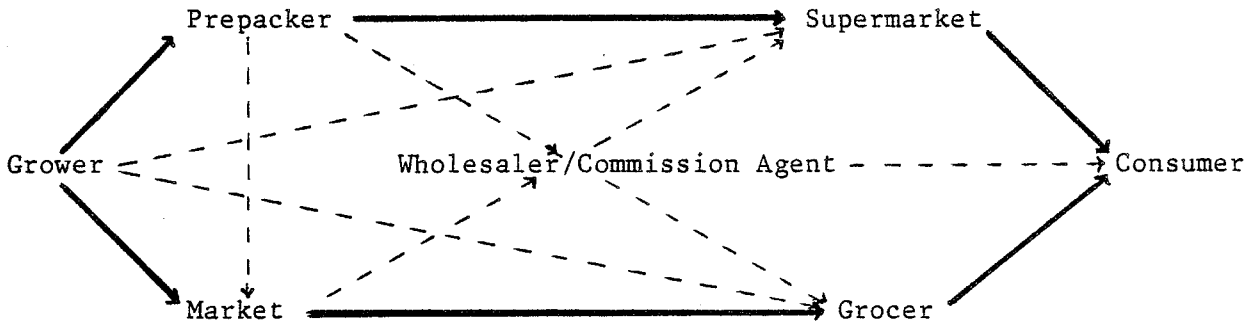


TABLE 3

Annual Potato Volumes for Markets and Prepackers

(approximate only)

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(tonnes)		
Markets	20,800	8,000	14,000	11,000	4,800
Prepackers	18,200	1,600	*	9,500	*

* Unknown

Source: Sheppard, 1982

Since there are two main distribution channels for main crop table potatoes the results obtained are presented separately. The selling prices, margins, and distribution costs for the prepacker–supermarket channel are presented first, followed by a similar analysis for the central market–grocer channel.

3.2 The Prepacker–Supermarket Distribution Channel (Channel 1)

3.2.1 Selling Prices and Margins

At each level of distribution the units potatoes are sold in differ. Growers sell their potatoes loose in bin or tonne lots to the prepackers, who sell a range of different size bags to the supermarkets. The highest volume of bags sold in supermarkets are 5 kg bags (pers. comm. prepackers). The prices given in Table 4 (and Figure 2) are therefore standardised to per kilogram prices for the 5 kg bag for both prepackers and supermarkets. The per kilogram prices for growers are derived from the price for bin lots.

TABLE 4

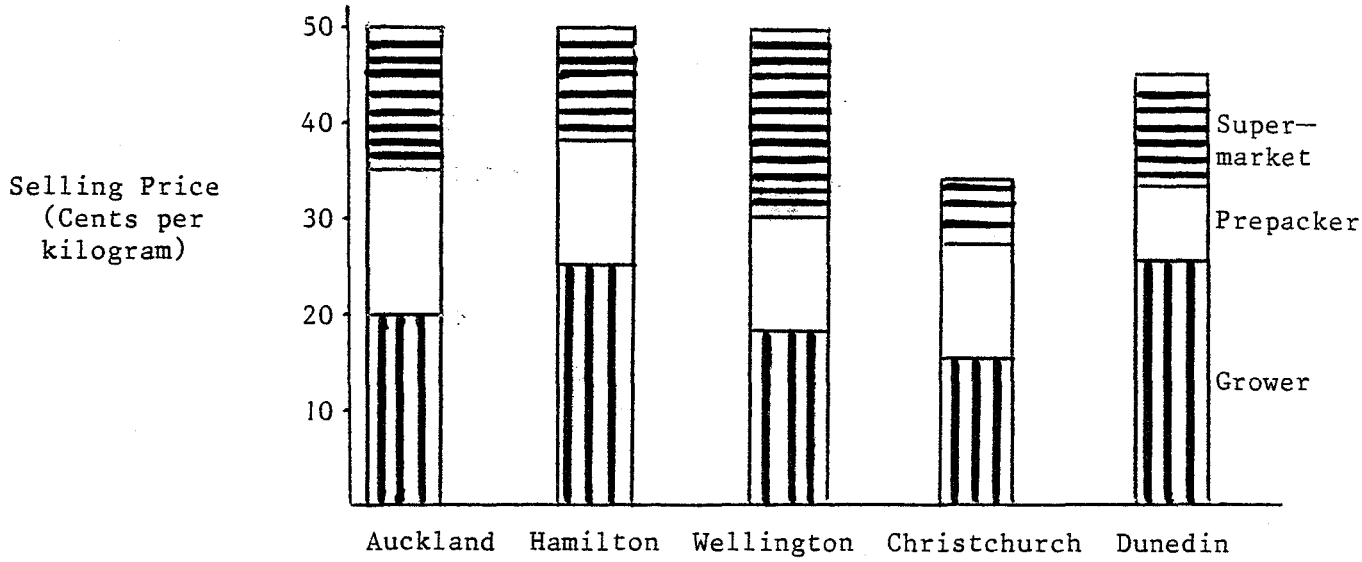
Average Potato Selling Prices[a] (Channel 1)

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(cents per kilogram)				
Grower	20	24	18	16	25
Prepacker	35	38	30	27	32
Supermarket	50	50	50	33	43

[a] For period 21 March – 22 April 1983.

FIGURE 2[a]

Average Potato Selling Prices (Channel 1)



[a] From Table 4.

Christchurch has the lowest selling prices for growers, prepackers and supermarkets. Dunedin supermarket prices are also low.

These low selling prices do not necessarily mean low margins, as Table 5 shows. Selling margins are defined as the difference between buying and selling prices divided by the selling price. They are presented as percentages.

TABLE 5

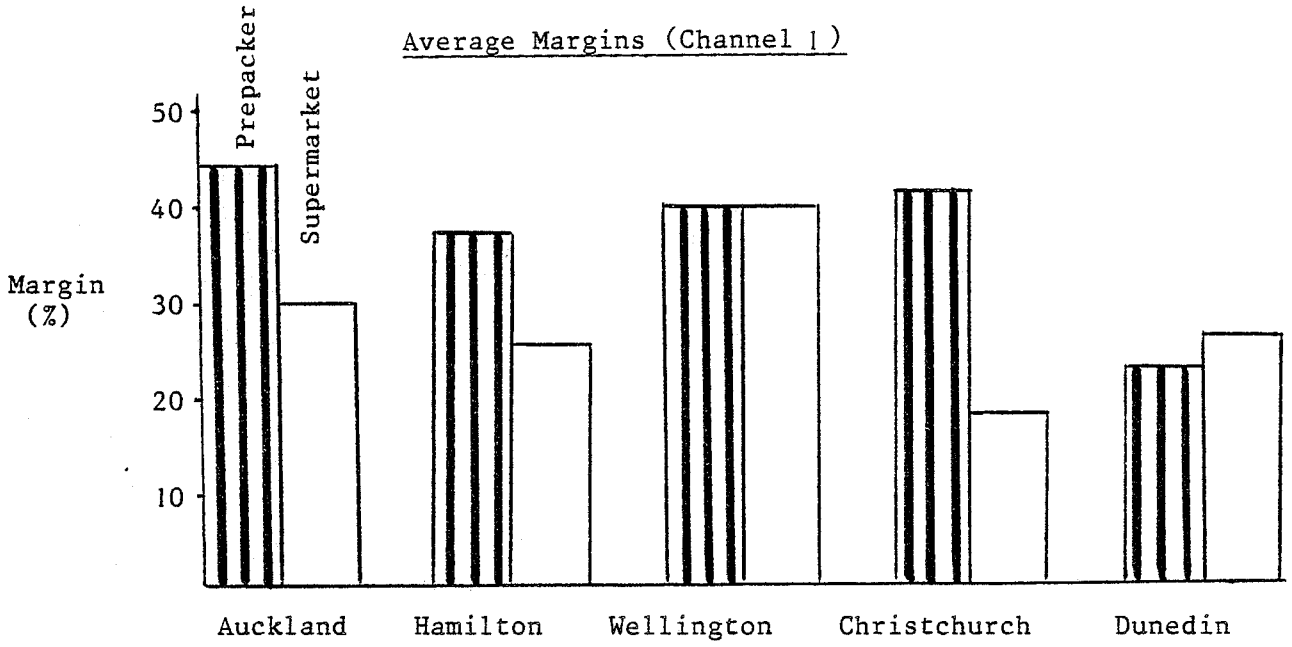
Average Margins (Channel 1)

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(%)		
Prepackers	43	37	40	41	22
Supermarkets	30	24	40	18	26

Christchurch has the lowest average margin for supermarkets (18 per cent), reflecting the high level of supermarket competition, and Wellington has the highest (40 per cent). Prepackers in Dunedin have a markedly lower average margin (22 per cent) than in other centres, where the average margin is around 40 per cent. Auckland (Pukekohe) prepackers have the highest average margin at 43 per cent (see also Figure 3).

FIGURE 3[a]

Average Margins (Channel 1)



[a] From Table 5

The survey of retailers involved collecting the prices of all the different bag sizes. These prices are averaged and presented in Table 6. The per kilogram prices are bracketed in the table. Christchurch supermarket prices are lower than for the other centres reflecting the lower cost of potatoes and the high level of supermarket competition.

TABLE 6

Average Prices for Different Bag Sizes (Supermarkets)

Bag Size (kg)	Auckland		Hamilton		Wellington ($)		Christchurch		Dunedin	
	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg
loose	—	0.54	—	0.62	—	0.66	—	0.76	—	0.69
3	1.79	(0.60)	1.89	(0.63)	1.76	(0.59)	1.56	(0.52)	1.35	(0.45)
4	1.88	(0.47)	—	—	—	—	2.12[a]	(0.53)	—	—
5	2.48	(0.50)	2.51	(0.50)	2.52	(0.50)	1.63	(0.33)	2.15	(0.43)
10	4.57	(0.46)	3.32	(0.33)	—	—	2.94	(0.29)	4.00	(0.40)
20	5.49	(0.27)	5.38	(0.27)	5.25	(0.26)	5.04	(0.25)	—	—

[a] Washed potatoes

Table 7 shows the percentage of supermarkets selling each particular bag size.

TABLE 7

Supermarkets Selling Each Bag Size

Bag Size (kg)	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(%)		
loose	8	75	44	42	100
3	58	75	56	58	29
4	25	—	—	83	—
5	75	100	89	83	100
10	33	75	—	93	79
20	33	75	89	31	—

The most popular bag sizes overall are 3 kg and 5 kg, except in Dunedin where there are very few 3 kg bags. Hamilton and Dunedin supermarkets sell more loose potatoes than other centres, Christchurch has more 4 kg 'washed' bags of potatoes, and Hamilton and Wellington have more 20 kg bags in supermarkets. Hamilton, Christchurch and Dunedin all have a high proportion of 10 kg bags but in Dunedin these are grower packed as opposed to prepacked. The 20 kg bags in supermarkets are all grower packed.

3.2.2 Costs of Distribution

This survey of distribution costs is limited to an examination of direct costs only. These were collected by personal inverview as opposed to an examination of business accounts. The research was not intended to provide information on grower production costs, although transport costs for growers are given.

(a) Grower Distribution Costs Transport distances for growers were obtained through the central markets and prepackers. The figures are approximate and attempt to give an average distance from the market/ prepacker to the wide range of grower locations. Since the majority of growers transport potatoes using their own trucks, the actual transport costs presented (derived from commercial carriers) may be slightly different to those incurred by the grower. Commercial carriers charge by the tonne or bag within set distances. The transport rates presented in Table 8 therefore apply to growers whose locations and destinations are similar to those in the table.

TABLE 8

Typical Grower Transport Costs to Prepackers

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(cents per kilogram)		
Rate	0.7	1.5	2.4	1.5	2.5
Distance (km)	15	80	60	40	150
Location (e.g.)	Pukekawa	Pukekawa	Opiki	Methven	Waimate
Destination (e.g.)	Pukekohe	Hamilton	Nae Nae	Belfast	Dunedin

Another direct cost for growers selling potatoes to a prepacker is waste. Waste potatoes are those that are too big, too small, green, rotten, diseased, damaged or unacceptable in some other way. Both Wellington and Dunedin prepackers are paying only for packed-out weight, which means all waste is deducted from the growers' return. Auckland, Hamilton and Christchurch prepackers allow 5 per cent waste, after which any additional waste is deducted from the growers' return.

(b) Prepacker Costs The costs associated with the prepacker level of distribution are labour, bags, cartage to supermarkets (in three of the five urban centres), overheads, and the cost of the potatoes. The direct cost of packing a 5 kilogram bag of potatoes (minus cost of potatoes and overheads) varied from 18 cents per bag to 38 cents per bag, with the average cost for the five urban centres being 25 cents per bag. Due to the confidentiality of this information these costs cannot be compared by urban centre, except to say that South Island prepackers' costs were lower. The Christchurch prepacker is the only one producing 'washed' 4 kilogram prepacks and the cost per bag of this operation is approximately double that for the 5 kilogram unwashed bag.

(c) Supermarket Costs Supermarkets only have one separable direct cost associated with selling potatoes, which is transport from the prepacker and the market. This cost is only incurred in Wellington, Christchurch

and Dunedin for prepacks. In Auckland and Hamilton the prepackers pay for cartage and this is covered in the selling price to the supermarkets. Table 9 shows the transport cost from prepacker to supermarket, the outlet that pays for the transport, and the location of the prepackers.

TABLE 9

Typical Prepacker/Supermarket Transport Costs to Supermarkets

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(cents per kilogram)				
Paid by Prepacker	2.5	0.5	—	1.4	—
Paid by Supermarket	—	—	2.0	1.4	1.6
Prepacker location (e.g.)	Pukekohe	Hamilton	Nae Nae	Belfast	Dunedin

In Christchurch the prepacker pays for cartage in to the market and the supermarket pays for cartage out from the market. Wellington and Auckland have the highest average transport costs from prepackers, because they are located further away from the supermarkets. (Wellington has three prepackers supplying it — one in Palmerston North, one in Nae Nae, and one in Wellington.) The total transport cost for Christchurch (2.8 cents) is higher than the others because of the double transporting of the potatoes.

Most supermarkets rely on commercial carriers to transport their produce, although four supermarkets (two major chains) did use their own trucks.

3.3 The Market — Grocer Distribution Channel (Channel 2)

3.3.1 Selling Prices and Margins

The selling prices through this channel (Table 10, Figure 4) have been standardised to per kilogram prices, although growers and markets sell in 20—23 kilogram bags and grocers sell mainly 3 kilogram bags.

TABLE 10

Average Potato Selling Prices[a] (Channel 2)

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(cents per kilogram)				
Grower	18	15	19	18	23
Central Market	20	17	21	20	25
Wholesaler[b]	21	20	22	22	—
Grocer	54	48	56	54	55

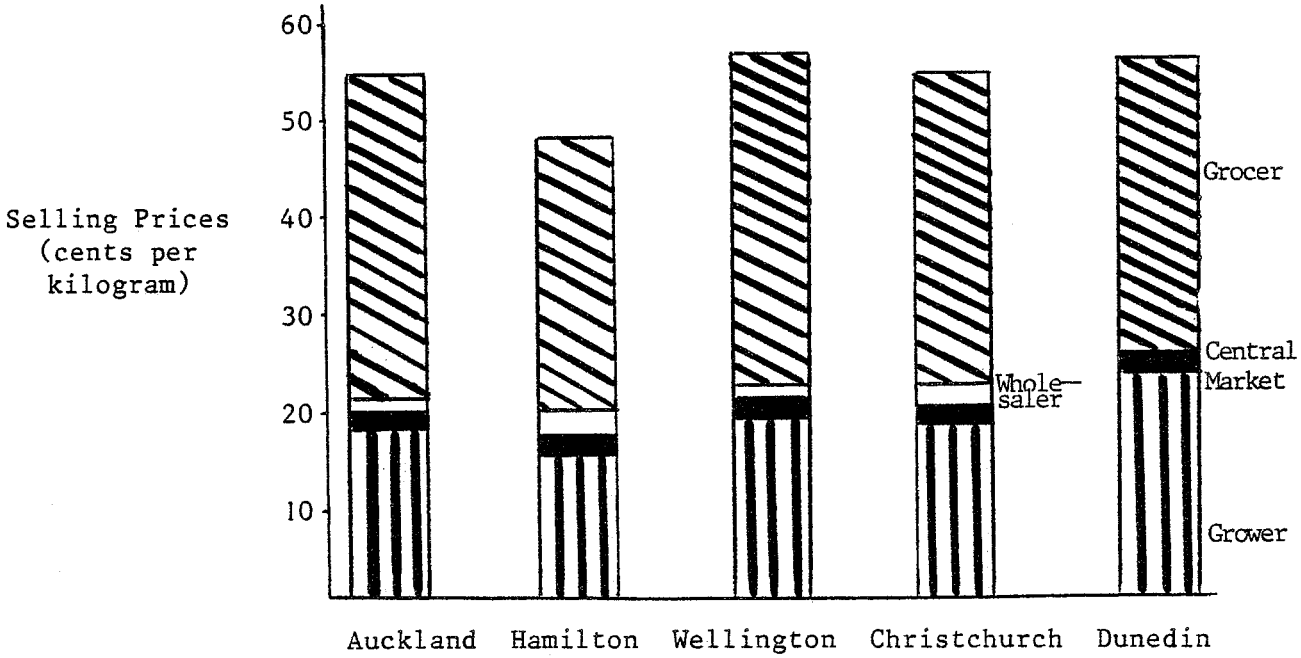
[a] for period 21 March to 22 April 1983.

[b] includes commission agents

Hamilton has the lowest selling prices for growers, markets and grocers. These prices reflect the poorer quality[1] of the 'local' potatoes going through this channel. Other centres have similar average selling prices (Figure 4), for growers, markets and grocers.

FIGURE 4[a]

Average Potato Selling Prices (Channel 2)



[a] From Table 10

The average margins for markets and grocers are also similar for all urban centres (Table 11 and Figure 5). Hamilton, with the lowest average selling price for grocers, has the highest average margin at 65 per cent. Dunedin grocers have a relatively low average margin at 55 per cent. These margins have been calculated using the markets' selling price rather than the wholesaler/commission agents, because less than half of all grocers use wholesalers or commission agents (Table 2).

TABLE 11

Average Margins (Channel 2)

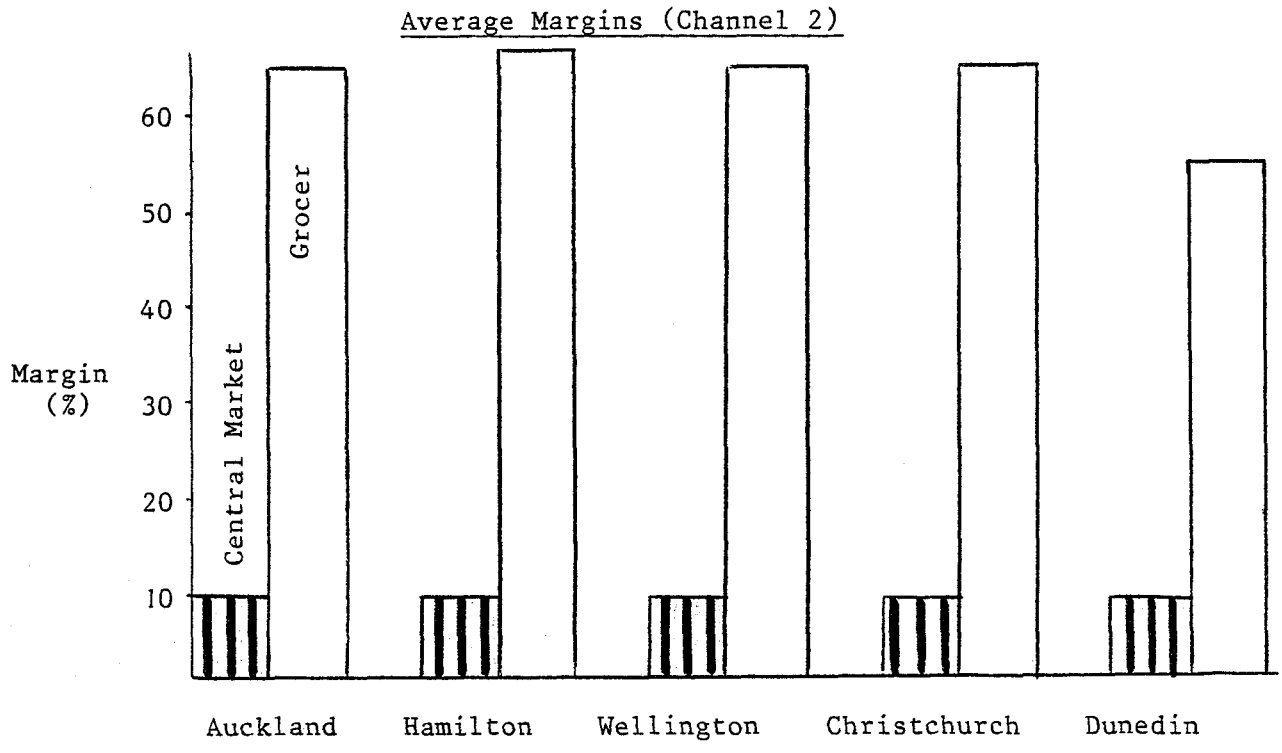
	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(%)		
Markets	10	10	10	10	10
Wholesalers[a]	5	10	5	10	—
Grocers	63	65	63	63	55

[a] includes commission agents.

[1] Poorer quality mainly due to lightness of colour versus Pukekohe potatoes. See also Appendix 3.

The central markets all have a 10 per cent commission/margin. Wholesalers (predominant over commission agents in Hamilton and Christchurch) add a further 10 per cent and commission agents (predominant in Auckland and Wellington) have an average margin of 5 per cent.
None of the Dunedin grocers surveyed used either wholesalers or commission agents. Wholesalers' margins are higher than commission agents because they usually incur transport costs and sometimes repacking costs (e.g. from 20 kilogram into 3 kilogram bags).

FIGURE 5[a]



[a] From Table 11

The prices for the different bag sizes found in grocers shops are presented in Table 12. These prices are averaged for each urban centre and the per kilogram prices have been bracketed alongside.

TABLE 12

Average Prices for Different Bag Sizes (Grocers)

Bag Size (kg)	Auckland		Hamilton		Wellington ($)		Christchurch		Dunedin	
	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg	Per Bag	Per kg
loose	—	0.65	—	0.55	—	0.53	—	0.68	—	0.65
1.5	—	—	—	—	1.03	(0.69)	—	—	1.06	(0.71)
2	1.15	(0.58)	1.11	(0.56)	1.01	(0.51)	1.13	(0.57)	1.36	(0.68)
3	1.63	(0.54)	1.45	(0.48)	1.69	(0.56)	1.63	(0.54)	1.65	(0.55)
4	2.30	(0.58)	2.02	(0.51)	—	—	2.00	(0.50)	—	—
5	2.29	(0.46)	2.10	(0.42)	2.50	(0.50)	2.13	(0.43)	2.30	(0.46)
10	—	—	3.75	(0.38)	3.45	(0.35)	2.73	(0.27)	3.80	(0.38)
20	5.81	(0.29)	4.98	(0.25)	5.75	(0.29)	5.83	(0.29)	5.50	(0.28)

This table shows that larger size bags are cheaper in terms of per kilogram prices. Average grocers' prices are similar over all centres.

Table 13 shows the percentage of grocers selling each particular bag size.

TABLE 13

Grocers Selling Each Bag Size

Bag Size (kg)	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(%)		
loose	22	8	22	71	65
1.5	—	—	22	7	10
2	13	67	22	21	20
3	74	17	71	57	60
4	9	83	—	14	—
5	57	8	57	57	25
10	—	17	7	29	85
20	30	58	71	29	5

The most popular bag size in grocer shops is the 3 kilogram bag, except in Hamilton where there are more 2 and 4 kilogram bags. Hamilton and Wellington grocers have a high proportion of 20 kilogram bags and Dunedin has a high proportion of grower packed 10 kilogram bags. Loose potatoes were found in more grocers shops in Christchurch and Dunedin, compared with North Island grocers where very few loose potatoes were sold.

3.3.2 Costs of Distribution

(a) Grower Distribution Costs Growers who sell potatoes to central markets incur much the same direct costs as those who sell to prepackers. Only transport, labour and waste costs are examined. Table 14 presents the transport rates given by commercial carriers for typical grower locations and market destinations.

TABLE 14

Typical Grower Transport Costs to Markets

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
			(cents per kilogram)		
Rate	2.0	0.6	3.0	2.0	2.5
Distance (km)	50	25	100	30	100
Location (e.g.)	Pukekawa	Morrinsville	Opiki	Lincoln	Waimate
Destination (e.g.)	Auckland	Hamilton	Wellington	Christchurch	Dunedin

Growers who sell to central markets must pack their potatoes into bags. This involves a labour cost. (The cost of the bag is recovered from the buyer.)[2] Although the potatoes are theoretically graded at this stage, a good deal of waste (sub-standard potatoes) appears to get through into the bags. The cost to the grower does not seem to be high however, as there is no intensive sampling of the potatoes at the markets to determine quality. In addition the price range from poor to excellent quality is only $1.50 per bag on average.

(b) Central Market Costs It is difficult to separate out any direct costs associated with selling potatoes for the central markets. The potato auctioneer/salesman's salary would be one direct cost and other indirect costs would be additional labour (both clerical and auction floor) and overheads. Where central markets have a policy of "clearing the floors", there is the cost of accepting lower prices in order to achieve this. Alternatively, if potatoes are not sold on a "clearance basis", a storage cost is incurred (e.g. Dunedin markets).

(c) Wholesaler and Commission Agents Costs

Wholesalers' and commission agents costs were not covered in depth. Wholesalers have overheads associated with buildings for storage as well as transport costs and labour. Commission agents tend to be one man operations with few direct costs.

(d) Grocers' Costs Grocers have a number of direct costs associated with selling potatoes. These include transport from the market, the grower's bag, the labour to repack the potatoes into smaller bags, the plastic bags and sometimes a wholesaler or commission agents' fee. In Auckland a hoist charge per bag is also incurred. Table 15 shows these costs for growers in each urban centre.

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[2] In some cases the cost of the bag is only partially recovered (e.g. for bags costing 30 cents only 17 cents is recovered).

TABLE 15[a]

Grocers Typical Direct Costs

(20 kg bag from Central Market)

Cost	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(cents per 3 kilogram bag)				
Transport	6	8	6	4	5
Growers Bag	2	3	2	2	6
Repack labour	5	5	5	5	5
Plastic bag	7	5	7	5	5
Waste	5	5	5	5	3
Total	25	26	25	21	24

[a] See also Appendix 4 for 20–23 kg bag costs.

The costs have been calculated from figures supplied by grocers. They have been presented for the 3 kilogram bag because this is the grocers highest selling bag size.

If the grocer was using a wholesaler as his source of potatoes, another 6–8 cents should be added to the total (see Table 2 for proportions of grocers using wholesalers and commission agents) and if he is using a commission agent another 3 cents should be added.

Hamilton grocers have the highest costs (26 cents per 3 kilogram bag) and Christchurch the lowest (21 cents per 3 kilogram bag). The transport charge is the main difference pushing Hamilton grocers' costs up, while low transport costs in Christchurch are the main reason for Christchurch grocers' low overall costs.

3.4 Channel Comparisons

The selling prices and margins through both channels can be compared for each urban centre (Tables 16 and 17). Only growers' and retailers' prices are compared because central markets and prepackers have very different costs and consequently their selling prices are not equivalent.

Channel 1 is the grower–prepacker–supermarket channel and channel 2 is the grower–market–grocer channel. It is apparent that the difference between the retail price and the grower price is lower for channel 1 than channel 2.

TABLE 16

Average Potato Selling Prices[a] (Both Channels)

	Auckland		Hamilton		Wellington		Christchurch		Dunedin	
	(cents per kilogram)									
Channel	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Growers	20	18	24	15	18	19	16	18	25	23
Retailers	50	54	50	48	50	56	33	54	43	55
Channel Price Difference	30	36	26	33	32	37	17	36	18	32

The average selling prices for growers do not vary significantly whether potatoes are sold to a prepacker or a central market. The variation is 1 or 2 cents higher or lower, except in Hamilton where 'local' potatoes are not acceptable for prepackaging. Hamilton prepackers pay a premium of 9 cents per kilogram extra for Pukekohe potatoes.

Retailers' average selling prices are higher for grocers than supermarkets in all centres (by 4 to 21 cents), except in Hamilton where grocers sell 'local' potatoes and supermarkets sell Pukekohe ones. Grocers' average selling prices are also more consistent for all centres than supermarket prices with no lower prices in the South Island.

TABLE 17

Average Margins for Retailers

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
	(%)				
Supermarkets	30	24	40	18	26
Grocers	63	65	63	63	55

The average margins for retailers are also higher for grocers than supermarkets in each urban centre. These higher margins reflect the difference in buying price from prepacker versus central market, as well as the higher costs incurred by grocers.

Grocers and supermarkets can also be compared for the different bag sizes they sell. Table 18 shows the proportions of each type of retailer selling 2, 3, 4 and 5 kilogram bags.

Grocers have a wider range of bag sizes because they package the potatoes themselves. This range of bag sizes includes sales of more 2 and 4 kilogram bags through grocers than through supermarkets, but less 5 kilogram bags.

TABLE 18

Retailers Selling Each Bag Size

Bag Size (kg)	Auckland		Hamilton		Wellington (%)		Christchurch		Dunedin	
	(S)[a]	(G)[b]	(S)	(G)	(S)	(G)	(S)	(G)	(S)	(G)
2	—	13	—	67	—	22	—	21	—	20
3	58	74	75	17	56	71	58	57	29	60
4	25	9	—	83	—	—	83	14	—	—
5	75	57	100	8	89	57	83	57	100	25

[a] S — supermarkets

[b] G — grocers

The distribution costs through both channels are compared from the prepacker/market stage through to the retailers. From prepacker to supermarket the average cost added to a 5 kilogram bag was 26 cents. (This average includes the prepackers costs (Section 3.2.2 (b)) and those areas where freight costs from the prepacker to the supermarket are paid by the supermarket (Section 3.2.2 (c)).) From market to grocer the average cost added to a 3 kilogram bag was 24 cents. This is equivalent to 5 cents per kilogram through the prepacker—supermarket channel and 8 cents per kilogram through the market—grocer channel.

The higher distribution costs associated with the market—grocer channel can be attributed to the grocer's smaller operation which when compared with the prepacker—supermarket channel does not lead to the same economies of scale in the repacking operation (especially labour). Also, the use of 20 kilogram bags for supply through the central markets contributes to the cost differential. However, the major component of the additional cost is the level of waste associated with the grocer repacking. This cost is largely avoided by the prepackers as they mainly pay for potatoes on the packed out weight rather than the weight received.

CHAPTER 4

CONCLUSIONS AND IMPLICATIONS

The first objective of this study was to provide an indication as to which distribution channels were more cost efficient. The results show there are two main distribution channels; the grower–prepacker–supermarket channel and the grower–central market–grocer channel (see Tables 1 and 2, and Figure 1). The selling prices at the retail level of distribution are higher in grocers' shops than in supermarkets (see Table 16), with supermarkets selling at average prices between 33–50 cents per kilogram, and grocers selling at average prices between 48–56 cents per kilogram. The distribution costs are also higher through the grower–central market–grocer channel. The average cost added to a 3 kilogram bag through this channel is 24 cents, or 8 cents per kilogram. The average cost added to a 5 kilogram bag through the grower–prepacker–supermarket channel is 26 cents, or 5 cents per kilogram.

These results indicate that the grower–central market–grocer channel is less cost efficient than the grower–prepacker–supermarket channel. The main reasons for this are the greater economies of scale achieved through the prepacker–supermarket channel and the non–payment for waste potatoes by prepackers.

As grocers' potato prices are higher than those in supermarkets, most consumers will eventually move to the supermarket (in line with trends for normal grocery purchasing) given that the potato quality in both outlets is similar (or better in supermarkets) and that both stock a range of bag sizes. This trend is reinforced by overseas evidence given by Bohall (1982) who indicates that in both Australia and the U.S.A. most potato sales are now through supermarkets. New Zealand has tended to follow these countries in its purchase patterns and this suggests a growing importance for the grower–prepacker–supermarket channel. The grocers shop will continue selling potatoes, but at a lower proportion of total sales to people requiring loose potatoes, small bags and/or weekend/evening sales.

The second objective of the study was to suggest strategies to improve the distribution channels and so result in better returns to the grower. If the long-term trend is towards a greater use of the grower–prepacker–retailer channel, then the method of determining prices for growers should also change. It would be inappropriate for the central markets to have the main influence on potato prices if the bulk of potatoes were going to prepackers. Instead, price negotiations between growers and prepackers would evolve.

Assuming that growers will eventually be dealing mostly with prepackers, they have two alternatives with respect to gaining greater returns. If the price set by the prepacker is considered to be too low to justify producing the potatoes, the grower can stop producing. On the other hand, if the grower wishes to increase his market power he can join with other growers in order to increase the prepackers' price by threatening to withhold the potatoes. Alternatively, such groups can establish their own prepacking facilities and secure the profits available to the prepacker/wholesaler market segment.

Such syndicates or groups of producers (selling to prepackers) cannot function effectively where there is a tendency for individual producers to undercut the agreed price set for the rest of the group in times of "over

supply". The establishment of grower owned prepacking facilities could therefore be an advantage.

In conclusion growers are likely to be associated more with prepackers rather than central markets in the future. The prices set by central markets will therefore become inappropriate for prepackers. In order for growers to achieve greater returns, the prepackers in a region must be seen to be competing for the supply of potatoes. In regions where there is only one prepacker or a number acting in collusion, growers must decide whether the price justifies producing potatoes, negotiate with the prepacker as a group, or form their own prepacking/wholesale supply activity.

PART 2

POTATO PROCESSING

CHAPTER 1

INTRODUCTION

This report presents the findings of a survey of potato processors. The need for the research arose from previous research commissioned by the New Zealand Potato Growers' Federation in 1981. This previous research identified the potato processing sector as a major outlet for sales of potatoes by growers (Sheppard, 1982). As a result of the sector's importance it was considered that more information on the sector's requirements, products, customers and recent sales trends should be collected.

The objectives of this study were to:

1. obtain information on the processing sector's requirements and so indicate how these can best be met by growers, and;

2. to forecast trends in the processing industry so that growers are aware of the potential of this sector.

Chapter 2 of this report describes the research method used. The results of the research are presented in Chapter 3 and Chapter 4 draws conclusions and implications from the results.

CHAPTER 2

RESEARCH METHOD

The research method was chosen so that the information requirements of the project would be adequately covered. The objective of the project wasto obtain data on the role of the processing sector within the potato industry, its requirements, customers, product types and sales trends.

The datawere considered to be best collected by means of a mail survey. A questionnaire was designed for the potato processors to fill out and mail back by freepost (Appendix 5). This method was the most appropriate in terms of the required amount of data, the time available, the resources available and degree of control required over the sample.

The sample of potato processors was selected by using a wide definition of the population, that is, food processors. This was necessary because the sampling frame used was the yellow pages of all New Zealand Telephone Directories, and the headings 'Food Processors and Packers', 'Frozen Food Specialists', and 'Potato Chip Manufacturers' were the closest definitions of potato processors available. To supplement this list of processors, those processors known to be missing from the yellow pages were added (from personal knowledge and information supplied by 'experts' in the industry). A total of 79 questionnaires was distributed.

This distribution of questionnaires was a wide net and it was anticipated that the total number of potato processors operating would be covered. Because the sample obtained could be validated using the estimated volume of potatoes going to processors directly from growers (Sheppard, 1982), selection and non-response errors were expected to be minimal.

The data contained in the returned questionnaires were then analysed at Lincoln College, and are presented in summary form in Chapter 3.

CHAPTER 3

RESULTS

3.1 Survey Representation

From the 79 questionnaires sent out, 38 were returned. This is a 48 per cent response rate. Of those returned, only 16 (42 per cent) were from organisations that processed potatoes. From discussions with industry representatives and the known identity of those organisations which have responded to the survey, it is estimated that only four significant potato processors did not forward a response. From the consistency of the results and knowledge of the type of operation carried out by the processors who did not respond to the survey, it is considered that the lack of their response did not detract from the representativeness of the results nor the validity of the conclusions.

In order to provide a further check on the degree of representation achieved by this survey, the total volume of potatoes declared by respondents as being their annual throughput, can be compared with previous estimates of the volume of potatoes used by processors. Sheppard (1982) estimated from a survey of growers that approximately 15 per cent of total potato production in 1979/80 and 1980/81 was sold directly from growers to potato processors. It is estimated that total potato production in 1981/82 was approximately 200,000 tonnes. This would imply a grower to processor sales volume of approximately 30,000 tonnes. The volume of potatoes purchased by potato processor survey respondents was 32,600 tonnes per year. One third of this volume was sourced from wholesalers and merchants, leaving a volume of approximately 22,000 tonnes for supply from growers. The inclusion of the known processors who did not respond to the survey would raise this level of supply to the estimated supply of 30,000 tonnes, based on the previous survey.

It can therefore be concluded that this survey provides an adequate representation of the industry both in terms of the number of processors and the volume of potatoes covered.

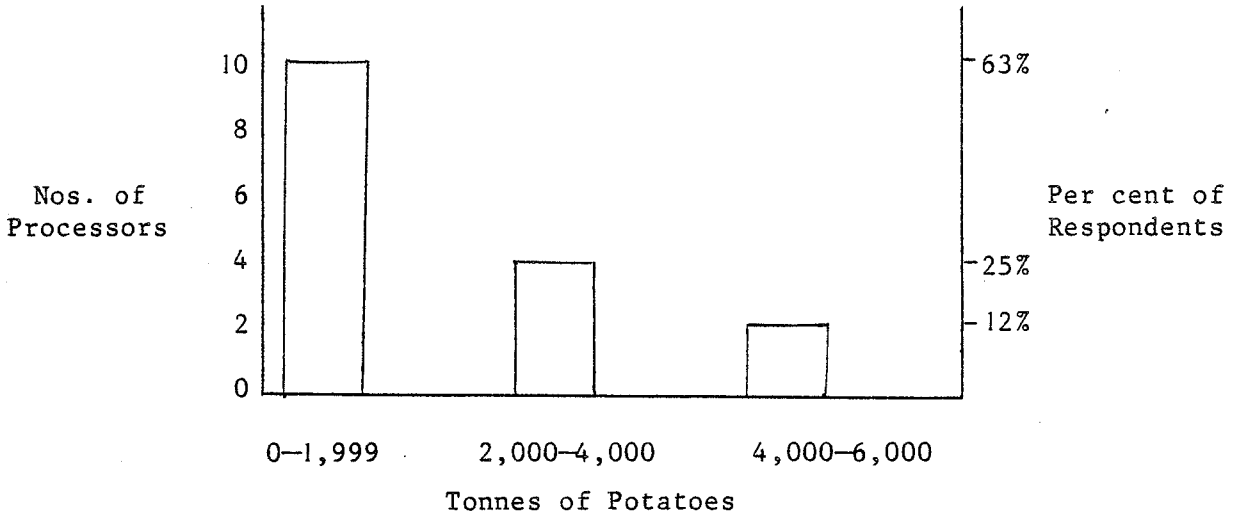
Of the potato processors that returned questionnaires, seven were located in Ward 1, three in Ward 2 and the remaining six in Ward 3.

3.2 Supply Sources and Volumes

The annual volumes of potatoes acquired ranged from 2 tonnes per year to 6,500 tonnes per year. This indicates that a wide range of processor sizes exists in the industry. However, the majority of respondents acquired between 2 and 2,000 tonnes annually (Figure 6).

FIGURE 6

Volume of Potatoes Acquired Annually



It should be noted that two of the processors from whom responses were not received are each estimated to use over 4,000 tonnes annually. Other non-respondent potato processors are likely to use approximately 2,000 tonnes of potatoes annually. The total annual usage given by survey respondents was 32,600 tonnes. The addition of non-respondents to this total is estimated to raise the total annual usage of potatoes for processing to approximately 45,000 tonnes.

Fifty-five per cent of the total volume acquired by processors came direct from potato growers. Thirty-three per cent was supplied through wholesalers or merchants, and eleven per cent of the volume was derived from processors' own farms. Only one per cent of the potatoes acquired came from the central markets (Table 19).

TABLE 19

Sources of Supply

	Central Market	Independent Growers	Wholesaler/ Merchant	Processor Owned Farm	Total
Per cent of Total Volume of Potatoes Acquired (%)	1	55	33	11	100
Per cent of Processors (%)	6	69	38	13	126
Number of Processors	1	11	6	2	

All of the processors dealing with growers and wholesalers had contracts with either the grower or the wholesaler or both. Four of

the processors that obtained potatoes from growers also had wholesalers as a supply source which explains why the total percentage is greater than 100.

The addition of non-respondents to the information given in Table 19 is not considered likely to change the proportionate distribution of potato sources for processors. Therefore, of the estimated total annual potato usage by processors of 45,000 tonnes, approximately 25,000 tonnes was sourced directly from independent growers and 15,000 tonnes was supplied through wholesalers and merchants, the remaining 5,000 tonnes being sourced predominantly from processor owned farms. The total supplied direct from farms (both independent and processor owned) is therefore approximately 30,000 tonnes annually, a volume equivalent to that derived from a previous study (Sheppard, 1982).

The total processor estimated annual usage of approximately 45,000 tonnes represents approximately 22 per cent of total annual potato production.

Sixty-three per cent of the processors said they stored potatoes to ensure a continuous supply. This storage was either at the processing plant or on the grower's farm. Eleven (79 per cent) of the processors (excluding those with their own farm) said they arranged delivery of the potatoes. This was often stated to be part of the contract with the grower.

3.3 Potato Specifications

The potato specifications desired by processors are similar for nearly all their products (dehydrated dice, flakes, chips, crisps and peeled potatoes). The one exception was the smallest processor (in terms of volume of potatoes purchased) who made croquettes and required only damaged potatoes, which he obtained from another processor.

Typical specifications are presented in Table 20. The most important of these appear to be sugar content, percentage of solids, size and presence of damage or disease.

TABLE 20

Processors' Potato Specifications[a]

Solids	Sugar Content	Size	Dirt	Physiological Damage	Machine Damage	Disease
>20%	<0.1%	>50 mm (2")	<2%	<1%	<4%	Nil

[a] See also Appendix 2 for "actual" specifications.

Other less important specifications were that potatoes should be mature, a smooth shape, have firm skin, be dry and weigh over 84 grams (3 oz). The varieties given as acceptable (when stated) were Ilam Hardy, Wha, Rima, Aucklander, Whitu and Kennebec.

The potatoes were usually tested on arrival at the processing site to ensure compliance with the desired specifications. The solids content was determined by a specific gravity test and the sugar content by a cooking test and glucose indicator strip. Dirt was measured by weight before and after washing, and size, damage and disease were detected by sight. Physiological damage and disease included frosted, greened, sprouting, hollow, flecked, rust, scab, moth, blight, dry and wet rot, and worms.

The potatoes could be rejected if they didn't meet solids, sugar and disease specifications. For dirt, damage, and size specifications the contract price could be lowered if the potatoes were found to be outside the specifications.

In the majority of cases the potatoes were sorted before delivery by the grower. Only two (13 per cent) of the processors stated that all sorting was done after delivery at the processors. Another two (13 per cent) processors said they also sorted after delivery even when the grower had already sorted them. However, some method of sorting during processing is evident, because more than these four firms had methods for disposal of substandard potatoes. Five (31 per cent) of the processors returned waste to the grower, another five (31 per cent) said the waste went out as stockfood and one (6 per cent) said the substandard potatoes were resold at the central market.

3.4 Product Types

Potato chips, crisps and whole peeled potatoes are the main product types (Table 21).

TABLE 21

Processed Potato Products

	Other[a]	Crisps	Frozen Chips	Fresh Chips	Par fried Chips	Flakes	Peeled	Diced
Per cent of Processors (%)	25	25	31	19	38	6	31	25
No. of Processors	4	4	5	3	6	1	5	4

[a] includes croquettes, powder and pulp/baby food.

Processors producing crisps tended not to produce chips or peeled potatoes and vice versa (with one exception). Par fried chips were the most commonly produced type of chip. Only one firm was producing potato flakes or 'instant mashed potatoes'. Of the firms producing potato dice, three out of the four firms produced dehydrated dice for dried meals (trampers etc.), and the other produced potato cubes for frozen mixed vegetables. Other products produced included potato pulp (baby food), potato powder (soups) and potato croquettes.

3.5 Customers

All processors had a wide range of outlets for their products (Table 22). There are 11 (69 per cent) processors selling to five or more different outlets. The firm producing potato croquettes also supplied an airline company.

TABLE 22

Outlets Sold to By Processors

Product Outlets	Caterers	Institutions	Restaurants	Hotels	Fast Food	Retailers	Food Processors	Wholesalers
Per cent of Processors (%)	75	56	81	81	63	75	38	19
No. of Processors	12	9	13	13	10	12	6	3

3.6 Future Trends

When asked what their sales trend had been over the last five years, 88 per cent (14) of the processors said their sales had increased. Six per cent (1) stated sales had stayed the same and one firm had only just started business. No particular product appeared to be doing better than any other.

Processors with plans for expansion over the next three years for the New Zealand market represented 69 per cent (11) of the total. Of these, 64 per cent (7) were planning to expand in potato chips. One firm was planning to expand into crisp expansions and extrusions.

The majority of processors (75 per cent, 12 firms) considered that CER would have no effect on their business. Two firms (12.5 per cent) saw potential export opportunities, and two other firms (12.5 per cent) saw the possible removal of export incentives as harmful to their present exports.

In the comments section of the questionnaire three firms expressed interest in possible new products. A biscuit firm was interested in a good quality, inexpensive potato flour, another firm was interested in canning potatoes and the third saw potential in a potato starch industry. The other three comments received were all directed at the lack of emphasis placed on processors' requirements in the potato industry. They wanted improved quality in the product available to processors and not just the 'left overs' from the domestic market.

CHAPTER 4

CONCLUSIONS AND IMPLICATIONS

The results indicate a total processor annual usage of approximately 22 per cent of total annual potato production. This indicates that the processing sector constitutes an important part of the potato industry. Many processors (69 per cent) are planning to expand their activity in the New Zealand market and their sales have increased in recent years. This sector is therefore likely to increase in importance.

It is apparent from the number of processors with facilities for handling waste and the additional comments received, that processors are not receiving potatoes specifically suitable to their needs. Given the importance that this sector already has and its predicted growth, then potato growers anticipating supplying this sector would be well advised to adjust their crops to the processor specifications previously mentioned (Table 20).

For potato growers to produce a higher quality product for the processing sector, adequate prices must be paid by processors in order to provide an incentive to produce better product. As this sector contains a number of processors and supply is arranged through private contracts with growers, prices are likely to reflect those necessary to attract appropriate product. Strict policing of the quality received by processors and the use of significant price penalties to encourage better product supply would be appropriate. The increase in production of processed potato products forecast by processors does not support findings in a recent national potato consumer survey carried out by the AERU (Sheppard and Hughes, 1983). This consumer survey provided results that indicate a stable situation with respect to the purchase of processed potato products. The reasons given for decreases in processed potato products' consumption were "too expensive", "dislike" and "less children".

These results suggest that some modification of the processed potato product may be appropriate. Besides the improvement of the raw material going into the products, a number of new products could be part of the modification. Overseas markets, particularly Europe and the U.S.A., have a far greater proportion of their total potato production being processed (Young, 1977; 1978) (Smith and Young, 1979). The supermarkets in these countries also offer a wider range of processed potato products with very little 'fresh' product being sold. If New Zealand is to follow these countries in both production and consumption patterns (as it has for other products), then the potential for new products must be realised. Interest in potato extrusions, flour, starch and canned products was expressed by some processors and potential product users.

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A P P E N D I C E S

APPENDIX I

Numbers and Types of Outlets Visited

	Auckland	Hamilton	Wellington	Christchurch	Dunedin
Central Markets	3	2	4	2	2
Prepackers	3	2	3	1	2
Wholesalers and Commission Agents	5	3	1	2	—
Supermarkets	12	4	9	12	7
Superettes	7	5	3	2	3
Superfruiterers	4	3	2	1	1
Fruiterers	10	3	7	7	5
Dairies	2	1	2	4	1
Total Visits	46	23	31	31	21

The outlets visited were chosen in order to ensure a representative coverage of the distribution and retail sectors in each centre. Visits to one or two supermarkets in each chain, for example, enabled representation for the whole chain to be established.

APPENDIX 2

Examples of Questions Asked

1. Retailers

1. Note retail prices on each bag size.
2. Note prepacker or label on bags.
3. Who transports your potatoes? Cost?
4. Who packs your potatoes?
5. What is your source of supply of potatoes?
6. When did these potatoes in your shop arrive?
7. How much waste do you usually have if you repack your own potatoes?
8. What other costs do you have in selling potatoes?

2. Prepackers

1. What is the average distance a grower has to transport his potatoes to you?
2. What does it cost him, or what is the name of a commercial carrier that transports potatoes here?
3. What is the average load a grower brings in?
4. What price per tonne are you paying this week?
5. How are these prices set?
6. Do you have loyal growers supplying your company?
7. What costs do you have in this operation?
8. What proportion of total costs would each of these factors be?
9. What is your total direct cost for a 5 kg bag of potatoes?
10. Who are your main customers?
11. What prices do you charge them for each bag size?
12. How much waste do you allow/get?
13. Who pays for cartage out to the customers? How much is it?

3. Central Markets

Same questions 1–3 as prepacker.

4. What prices are growers getting for a bag of potatoes this Monday (main market day)? Range? Average? Varieties?
5. How are these prices set? (by auction?)
6. What bag size is most common? What material is it made of? How much does it cost?
7. Who are the main buyers? (Commission agents? grocers?)
8. Do they transport the potatoes themselves? Who is a commercial carrier that transports potatoes away?

9. Are prices stable at the moment?
10. How do you determine the quality?

APPENDIX 3

Varieties and Quality of Potatoes

North Island retailers tended not to indicate variety on the bag or the shop price notice. In Auckland the emphasis for higher quality was on 'Rangitikei' potatoes as opposed to 'Pukekohe' potatoes. In Hamilton it was 'Pukekohe' potatoes rather than 'local' ones. There were complaints of poor quality in every urban centre although to a lesser extent in Dunedin. The main varieties in each centre at the time of the survey (21 March — 22 April) were obtained through the potato salesmen at the central markets. These were Rua in Auckland, Ilam Hardy and Rua in Hamilton, Ilam Hardy in Wellington, Ilam Hardy and Chippewa in Christchurch, and Ilam Hardy and Red King in Dunedin.

APPENDIX 4

Transport and Bag Costs for Growers

	Auckland	Hamilton	Wellington (per bag)	Christchurch	Dunedin
Transport Cost	50c	56c	40c	27c	16c
Bag Size	23 kg	23 kg	20 kg	20 kg	10 kg
Bag Cost	17c	17c	17c	13c	17c
Bag Material	jute/paper	paper/jute	paper/sack	plastic	multiwalled paper with handle

APPENDIX 5

PROCESSORS' QUESTIONNAIRE

APPENDIX 5

AGRICULTURAL ECONOMICS RESEARCH UNIT
LINCOLN COLLEGE, CANTERBURY

18th March, 1983

Dear Sir,

We are presently conducting a review of the potato market in New Zealand on behalf of the New Zealand Potato Board. An important part of that market is the processing sector.

In order to identify the role of the sector in the marketing system, we would appreciate your co-operation in providing some basic information on the activities of your company within that sector. The information collected will be used to ensure that the requirements of the processing sector are fully recognised in any adjustment of the industry that results from this research. It is therefore essential that all points of view are fully reflected in the results of the research in order to ensure that the most appropriate recommendations are made.

We would therefore appreciate your taking a few minutes to fill in the attached questionnaire and returning it in the enclosed free post envelope. Please be assured that any information collected will only be used on an aggregate basis and individual company figures will be kept strictly confidential.

Thank you for your assistance.

Yours faithfully,

R.L. Sheppard
Senior Research Economist

P.T.O.

Postal and telegraphic address: AERU, Lincoln College, Canterbury, New Zealand
Telephone Christchurch 252 811

Potato Processors Questionnaire

(Please tick boxes unless otherwise indicated)

1. Does your firm purchase fresh potatoes?

   Yes ☐

   No ☐

2. What volume of potatoes do you purchase per year?

   ☐ kilograms

3. Do you store potatoes to ensure a continuous supply?

   Yes ☐

   No ☐

4. From what outlets do you purchase potatoes? (Please give the estimated annual volume for each source)

	Annual Volume (kg)
Auction Centre	
Farmer	
Wholesaler	
Prepacker	
Own Farm	
Other (please specify) _____	

5. Are your potatoes supplied under contract?

   Yes ☐

   No ☐

   If yes, with which of the above sources? _____

6. Do you arrange delivery of the potatoes to your premises?

   Yes ☐

   No ☐

7. What potato specifications do you require? (e.g. size, shape, damage) (Please write your specifications below according to the products produced indicating which specifications are most important).

   _____

   _____

   _____

   _____

8. Do you require suppliers to sort to your requirements or are the potatoes sorted after purchase?

	Yes	No
Suppliers Sort	☐	☐
Sorted After Purchase	☐	☐

How are sub-standard potatoes used/disposed of?

_____

_____

9. What potato products do you produce?

Crisps	☐
Chips - frozen	☐
- fresh	☐
- par-fried	☐
Flakes	☐
Peeled whole potatoes	☐
Other Snack Foods	☐
Other (please specify)	☐

_____

10. What types of outlet do you sell to?

Caterers	☐
Institutions (shops, hospitals, prisons, etc.)	☐
Restaurants	☐
Hotels	☐
Fast Foods	☐
Retailers	☐
Processors	☐
Other (please specify)	☐

_____

11. What has your sales trend been over the last 5 years?

Increase	☐
Same	☐
Decrease	☐

Which products have increased? _____

Which products have decreased? _____

12. Do you have plans for expansion over the next 3 years for the New Zealand market?

Yes	☐
No	☐

If yes, in which products? _____

_____

13. How do you see Closer Economic Relations (CER) with Australia affecting your business?

_____

_____

_____

14. Any other comments on the Potato Processing Industry?

_____

_____

_____

_____

_____

APPENDIX 6

Potato Specifications

These figures come from DSIR, Lincoln and are estimated only. They are derived from their trial control plots.

	Sugar Content	Solids Content	Size	Physiological Damage
Ilam Hardy	0.1%	20%	80% (over 50 mm)	5%[a]
Rua	0.2%	21%	85% (over 50 mm)	1%[a]

[a] Only green and tuber moth.

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